

## SYSTEM AND METHOD FOR TESTING ELECTRONIC DEVICES ON A MICROCHIP

### ABSTRACT

A system and method for testing first and second sets of electronic devices on a microchip is provided. The first set of devices receive input data and then send output data to a first multiple input shift register (MISR). The second set of devices receiving input data and then sending output data to a second MISR. The method includes determining a first seed signature value associated with the first MISR that induces the first MISR to have a first final signature value comprising a plurality of identical binary values when the first set of devices send valid output data to the first MISR when receiving a first predetermined sequence of input data. The method further includes determining a second seed signature value associated with the second MISR that induces the second MISR to have a second final signature value comprising a plurality of identical binary values when the second set of devices send valid output data to the second MISR when receiving a second predetermined sequence of input data. The method further includes initializing first and second states of the first MISR and the second MISR, respectively, to the first and second signature values, respectively. The method further includes inputting the first and second predetermined sequences of input data to the first and second set of devices, respectively, and generating first and second final signatures values from output data received from the first and second set of devices, respectively. Finally, the method includes indicating that the first and second set of devices have failed testing when at least one of the plurality of binary values in the first and second final signature values are not identical.